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PAT 34/AMDT

insoluble organic polymer. Optional ingredients which may be present include cationic derivatives of polyamides (such as epichlorohydrin derivatives) or cationic surfactants.

- 5 GB 1329247 discloses a process for rendering keratinous or other protein material resistant to shrinkage. The process comprises a treatment with a resin followed treatment with a soil release agent. The resin can be a cationic derivatives of polyamide (such as an epichlorohydrin derivative).

10

GB 2039938 discloses a textile treatment composition which includes both anionic and cationic polymers.

Definition of the Invention

15

According to the present invention, there is provided a fabric care composition adapted for use in a domestic laundering process and comprising:

- a) at least one reactive cationic polymer,
20 b) at least one reactive anionic polymer, and,
c) at least one textile compatible carrier,
said reactive polymers each being capable of self cross-linking and/or cross linking to cellulose, wherein the cationic polymer and the anionic polymer are present in
25 amounts such that the overall charge provided by the polymers is positive, and wherein the composition comprises less than 10% of water-insoluble organic polymers.

It is believed that the use of an anionic polymer improves
30 the dye transfer properties of a fabric care composition which comprises a cationic polymer.

- 21 -

20% by weight of fatty acid, more preferably 1% to 10% by weight. The weight ratio of quaternary ammonium material or other cationic softening agent to fatty acid material is preferably from 10:1 to 1:10.

5

The fabric conditioning compositions may include silicones, such as predominantly linear polydialkylsiloxanes, eg polydimethylsiloxanes or aminosilicones containing amine-functionalised side chains; soil release polymers such as
10 block copolymers of polyethylene oxide and terephthalate; amphoteric surfactants; smectite type inorganic clays; zwitterionic quaternary ammonium compounds; and nonionic surfactants. Preferably, the silicone component is a dimethylpolysiloxane with aminoalkyl groups.

15

The fabric conditioning compositions may also include an agent which produces a pearlescent appearance, eg an organic pearlising compound such as ethylene glycol distearate, or inorganic pearlising pigments such as microfine mica or
20 titanium dioxide (TiO_2) coated mica.

The fabric conditioning compositions may be in the form of emulsions or emulsion precursors thereof.

25 Other optional ingredients include emulsifiers, electrolytes (for example, sodium chloride or calcium chloride) preferably in the range from 0.01 to 5% by weight, pH buffering agents, and perfumes (preferably from 0.1 to 5% by weight).

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- 28 -

CLAIMS

1. Fabric care composition adapted for use in a domestic laundering process and comprising:
 - 5 a) at least one reactive cationic polymer,
 - b) at least one reactive anionic polymer, and,
 - c) at least one textile compatible carrier,said reactive polymers each being capable of self cross-linking and/or cross linking to cellulose, wherein the
10 cationic polymer and the anionic polymer are present in amounts such that the overall charge provided by the polymers is positive, and wherein the composition comprises less than 10% of water-insoluble organic polymers.
- 15 2. Composition as claimed in Claim 1, wherein the reactive cationic polymer is an amine- or amide-epichlorohydrin resin and is present in the composition in an amount of from 0.01 to 35% by weight.
- 20 3. Composition as claimed in Claim 1 wherein the reactive anionic polymer is present in the composition in an amount of from 0.01 to 35% by weight.
4. Composition as claimed in Claim 2, wherein the amine-
25 or amide-epichlorohydrin resin has one or more functional groups capable of forming azetidinium groups.
5. Composition as claimed in Claim 2, wherein the amine-
or amide-epichlorohydrin resin has one or more azetidinium
30 groups.

- 29 -

6. Composition as claimed in Claim 2, wherein the amine- or amide-epichlorohydrin resin has one or more functional groups that contain epoxide groups or derivatives thereof.

5 7. Composition as claimed in any one of Claims 1 to 6, wherein the anionic polymer comprises carboxylate and/or sulphonate groups.

8. Composition as claimed in any one of Claims 1 to 6
10 which is a detergent composition further comprising at least one surfactant.

9. Composition as claimed in Claim 7 which is a laundry rinse composition.

15

10. Composition as claimed in Claim 9 which comprises a fabric conditioning and/or softening compound.

11. Composition as claimed in Claim 9 which further
20 comprises a silicone component.

12. Composition as claimed in Claim 11, wherein the ratio of amine- or amide-epichlorohydrin resin to the silicone component is from 1:1 to 30:1.

25

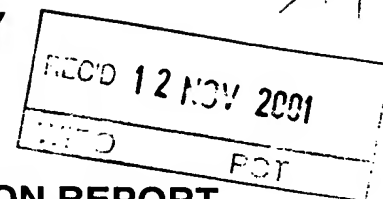
13. Composition is claimed in any one of Claims 1 to 6 which further comprises a perfume.

14. A method of treating fabric comprising applying to the
30 fabric a fabric care composition of any one of Claims 1 to 13 as part of a laundering process.

- 30 -

15. A method as claimed in Claim 14, wherein the composition is applied to the fabric during the rinse cycle.

5 16. A method as claimed in Claim 14, wherein the fabric comprises cellulosic fibres.



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|--|---|--|
| Applicant's or agent's file reference C3956(C)/rkk | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/EP00/09589 | International filing date (day/month/year) 27/09/2000 | Priority date (day/month/year) 01/10/1999 |
| International Patent Classification (IPC) or national classification and IPC C11D3/37 | | |
| Applicant UNILEVER PLC et al. | | |



1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

| | |
|---|---|
| Date of submission of the demand 29/03/2001 | Date of completion of this report 08.11.2001 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized officer Culmann, J-C Telephone No. +49 89 2399 8487  |

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/09589

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-3,5-20,22-27 as originally filed

4,4a,21,21a as received on 18/10/2001 with letter of 12/10/2001

Claims, No.:

1-16 as received on 18/10/2001 with letter of 12/10/2001

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/09589

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|------|--------|------|
| Novelty (N) | Yes: | Claims | 1-16 |
| | No: | Claims | |
| Inventive step (IS) | Yes: | Claims | 1-16 |
| | No: | Claims | |
| Industrial applicability (IA) | Yes: | Claims | 1-16 |
| | No: | Claims | |

2. Citations and explanations
see separate sheet

HarCor#2

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability

The subject-matter of current claims 1 to 16 amounts to an inventive step in the sense of Article 33(3) PCT, because:

- i) the closest prior art is WO 98/29530, since it relates to laundry detergent compositions which provide improved overall appearance, pill/fuzz reduction, and antifading benefits;
- ii) it teaches the beneficial effect of reactive cationic polymers, like Kymene 450™ (which is also one of the preferred material to be used in the present application);
- iii) WO 98/29530 is silent about the concomitant use of reactive anionic polymers of net negative charge capable of self-cross-linking and/or cross-linking to cellulose and hence about the synergetical (nb the synergy is unambiguously established viz the comparisons found in the description of the present application) improvement observed for the combinations investigated by the Applicants, some of them being illustrated in the examples of the present application;
- iv) which synergy amounts to an inventive step, since it is neither taught, suggested nor derivable from the prior art (i.e. the documents cited in the search report).

[The Examining Authority has particularly appreciated the willingness of the Applicants to match the points at issues as well as the conciseness and accuracy of their submissions.]

- 4 -

insoluble organic polymer. Optional ingredients which may be present include cationic derivatives of polyamides (such as epichlorohydrin derivatives) or cationic surfactants.

- 5 GB 1329247 discloses a process for rendering keratinous or other protein material resistant to shrinkage. The process comprises a treatment with a resin followed treatment with a soil release agent. The resin can be a cationic derivatives of polyamide (such as an epichlorohydrin derivative).

10

GB 2039938 discloses a textile treatment composition which includes both anionic and cationic polymers.

- 15 WO 98/29530 discloses the use of amine-amide epichlorohydrin resins to impart benefits regarding overall appearance, pill-fuzz reduction and antifading in the domestic laundry.

Definition of the Invention

- 20 According to the present invention, there is provided a fabric care composition adapted for use in a domestic laundering process and comprising:
- a) at least one reactive cationic polymer, which is an amine or amide epichlorohydrin resin,
 - 25 b) at least one reactive anionic polymer of net negative charge, and,
 - c) at least one textile compatible carrier,
- said reactive polymers each being capable of self cross-linking and/or cross linking to cellulose, wherein the
- 30 cationic polymer and the anionic polymer are present in amounts such that the overall charge provided by the

- 21 -

20% by weight of fatty acid, more preferably 1% to 10% by weight. The weight ratio of quaternary ammonium material or other cationic softening agent to fatty acid material is preferably from 10:1 to 1:10.

5

The fabric conditioning compositions may include silicones, such as predominantly linear polydialkylsiloxanes, eg polydimethylsiloxanes or aminosilicones containing amine-functionalised side chains; soil release polymers such as
10 block copolymers of polyethylene oxide and terephthalate; amphoteric surfactants; smectite type inorganic clays; zwitterionic quaternary ammonium compounds; and nonionic surfactants. Preferably, the silicone component is a dimethylpolysiloxane with aminoalkyl groups.

15

Preferably the ratio of amine- or amide-epichlorohydrin resin to the silicone component is from 1:1 to 30:1.

The fabric conditioning compositions may also include an
20 agent which produces a pearlescent appearance, eg an organic pearlising compound such as ethylene glycol distearate, or inorganic pearlising pigments such as microfine mica or titanium dioxide (TiO₂) coated mica.

25 The fabric conditioning compositions may be in the form of emulsions or emulsion precursors thereof.

Other optional ingredients include emulsifiers, electrolytes (for example, sodium chloride or calcium chloride)

30 preferably in the range from 0.01 to 5% by weight, pH

18-10-2001

EP0009589

C3956 (C) WO

Amended 12 October 2001

- 21a -

buffering agents, and perfumes (preferably from 0.1 to 5% by weight).

AMENDED SHEET

- 28 -

CLAIMS

1. Fabric care composition adapted for use in a domestic
laundrying process and comprising:
 - 5 a) at least one reactive cationic polymer, which is an
amine- or amide- epichlorohydrin resin
 - b) at least one reactive anionic polymer of a net negative
charge, and,
 - c) at least one textile compatible carrier,
- 10 said reactive polymers each being capable of self cross-
linking and/or cross linking to cellulose, wherein the
cationic polymer and the anionic polymer are present in
amounts such that the overall charge provided by the
polymers is positive, and wherein the composition comprises
15 less than 10% of water-insoluble organic polymers.
2. Composition as claimed in Claim 1, wherein the reactive
cationic polymer is present in the composition in an amount
of from 0.01 to 35% by weight.
- 20 3. Composition as claimed in Claim 1 wherein the reactive
anionic polymer is present in the composition in an amount
of from 0.01 to 35% by weight.
- 25 4. Composition as claimed in Claim 1, wherein the amine-
or amide-epichlorohydrin resin has one or more functional
groups capable of forming azetidinium groups.
5. Composition as claimed in Claim 1, wherein the amine-
30 or amide-epichlorohydrin resin has one or more azetidinium
groups.

- 29 -

6. Composition as claimed in Claim 1, wherein the amine-
or amide-epichlorohydrin resin has one or more functional
groups that contain epoxide groups or derivatives thereof.

5

7. Composition as claimed in any one of Claims 1 to 6,
wherein the anionic polymer comprises carboxylate and/or
sulphonate groups.

10 8. Composition as claimed in any one of Claims 1 to 6
which is a detergent composition further comprising at least
one surfactant.

15 9. Composition as claimed in Claim 7 which is a laundry
rinse composition.

10. Composition as claimed in Claim 9 which comprises a
fabric conditioning and/or softening compound.

20 11. Composition as claimed in Claim 9 which further
comprises a silicone component.

25 12. Composition as claimed in Claim 11, wherein the ratio
of amine- or amide-epichlorohydrin resin to the silicone
component is from 1:1 to 30:1.

13. Composition is claimed in any one of Claims 1 to 6
which further comprises a perfume.

- 30 -

14. A method of treating fabric comprising applying to the fabric a fabric care composition of any one of Claims 1 to 13 as part of a laundering process.

5 15. A method as claimed in Claim 14, wherein the composition is applied to the fabric during the rinse cycle.

16. A method as claimed in Claim 14, wherein the fabric comprises cellulosic fibres.

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|--|---|--|
| Applicant's or agent's file reference C3956(C)/rkk | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/EP 00/09589 | International filing date (day/month/year) 27/09/2000 | (Earliest) Priority Date (day/month/year) 01/10/1999 |
| Applicant UNILEVER PLC et al. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. _____

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C11D3/37

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C11D C08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|----------------------------|
| X | GB 2 039 938 A (OREAL) 20 August 1980 (1980-08-20) claims 1,2,9,10,12,16; examples 77,80 --- | 1-3,7,8, 13,14,16 |
| X | GB 2 185 499 A (BIP CHEMICALS LTD) 22 July 1987 (1987-07-22) claims --- | 1-3,6,7 |
| A | WO 98 29530 A (PROCTER & GAMBLE) 9 July 1998 (1998-07-09) cited in the application page 12, paragraph 4 -page 13, paragraph 2; claim 1 --- | 1,2,4-6, 8-10, 13-16 |
| A | WO 98 17764 A (BASF AG) 30 April 1998 (1998-04-30) cited in the application claims 1-3,7 --- | 1,2,6,8, 13,14,16 |

-/--

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

12 January 2001

Date of mailing of the international search report

19/01/2001

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040. Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Saunders, T

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 00/09589

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| A | <p>DE 28 37 851 A (IWS NOMINEE CO LTD) 20 March 1980 (1980-03-20) examples 1,23-28 -----</p> | 1-3,6,7 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/09589

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---------------------|----------------------------|---------------------|
| GB 2039938 A | 20-08-1980 | FR 2436213 A | 11-04-1980 |
| | | AR 226161 A | 15-06-1982 |
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| GB 2185499 A | 22-07-1987 | NONE | |
| WO 9829530 A | 09-07-1998 | BR 9714194 A | 28-03-2000 |
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| | | US 6140292 A | 31-10-2000 |
| WO 9817764 A | 30-04-1998 | DE 19643133 A | 23-04-1998 |
| | | EP 0934385 A | 11-08-1999 |
| | | US 6083898 A | 04-07-2000 |
| DE 2837851 A | 20-03-1980 | NONE | |

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

| | |
|--|--|
| Date of mailing (day/month/year) 13 July 2001 (13.07.01) | |
| International application No. PCT/EP00/09589 | Applicant's or agent's file reference C3956(C)/rkk |
| International filing date (day/month/year) 27 September 2000 (27.09.00) | Priority date (day/month/year) 01 October 1999 (01.10.99) |
| Applicant PARKER, Andrew, Philip | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 29 March 2001 (29.03.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|--|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer Zakaria EL KHODARY Telephone No.: (41-22) 338.83.38 |
|---|--|



Application No: GB 9923279.5
Claims searched: 1 to 20

Examiner: Michael Conlon
Date of search: 24 December 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): C5D (DHC, DHZ, DJA, DJX) D1P (PDV)

Int Cl (Ed.6): C11D, D06M

Other: Online: EPODOC, PAJ, WPI

Documents considered to be relevant:

| Category | Identity of document and relevant passage | Relevant to claims |
|----------|---|--------------------|
| X | GB2039938 A (L'Oreal) Example 29 | 1 at least |
| X | GB2005322 A (IWS) Example 1 | 1 at least |
| X | GB1329247 (IWS) Example 1 | 1 at least |
| X | US4121902 (Guise) Example 1 | 1 at least |

| | | | |
|---|---|---|--|
| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention. |
| & | Member of the same patent family | E | Patent document published on or after, but with priority date earlier than, the filing date of this application. |